

Appendix A

Behavioral Science Theory

INTRODUCTION

A general understanding of the behavioral and social science theory underlying the development of behaviorally-based prevention interventions is important to grantees and community planning groups for several reasons. First, many of the articles in the literature on intervention effectiveness include a description of the theory used to design the prevention intervention. In order to understand this literature, planners must be familiar with common theories. Second, while planning a comprehensive HIV prevention program, there may be unmet needs for which there are no proven interventions (e.g., for a particular population) reported in the literature. Therefore, planning groups will need to make recommendations about the types of interventions that may address these unmet needs. A basic foundation in behavior theory will be essential to planning groups who are faced with this task. As pointed out in Chapter 6, the extent to which an intervention is theory-based is one of the attributes community planning groups should use in prioritizing interventions. This appendix presents a brief description of some of the major theories from the behavioral and social science literature that have been used in HIV/AIDS prevention research.

THEORIES OF BEHAVIOR—A PRIMER

To develop and choose among interventions to change human behavior, it is useful to understand why people behave the way they do. Stated another way, the more we know about the factors underlying the performance or nonperformance of a behavior, the more successful we can be at designing an intervention that successfully influences that

behavior. Research can be done to determine which of several theoretical factors predicts or explains a particular behavior in a particular population. Interventions can then be developed to influence these intervening factors and thus to facilitate the desired prevention behavior.

There are many different theories of human behavior and behavior change that have been used to understand, explain, and predict health behavior. Of these many theories of behavior, three have been most frequently used in the behavioral and social science research on the prevention of HIV infection: the Health Belief Model, the Theory of Reasoned Action, and Social Cognitive Learning Theory. In addition to these three major theoretical models, there is a Transtheoretical Model that focuses on Stages of Behavior Change. Good reviews of the specific dimensions of each theory are found in Leviton (1989; 1990) and Baranowski (1990). The following discussion presents basic principles for each of these theories, provides references for further more detailed reading and illustrates how the relevant factors might underly HIV prevention interventions.

HEALTH BELIEF MODEL

The Health Belief Model is essentially a health education approach to behavior and intervention design. The model has been used to explain and understand a wide variety of health behaviors, including prevention and screening behaviors like participation in cardiovascular screening, immunization and checkup programs as well as treatment behavior like smoking cessation and compliance with dialysis regimens (Janz and Becker, 1984; Kirscht and Joseph, 1989; Rosenstock, 1974). More recently, it has been applied to behaviors that place people at risk of

HIV infection (e.g., Becker, 1988; Kirscht and Joseph, 1989; Montgomery et al., 1989).

As the name implies, the Health Belief Model assumes that health behavior is a function of four key health beliefs: the perceived personal susceptibility or vulnerability to the negative health condition; the perceived severity of the condition; the perceived efficacy of the behavior in dealing with the condition; and, the barriers to the behavior. Together, these belief components produce a readiness to act. In addition, many proponents of the health belief model recognize that cues to action are necessary to initiate action once the readiness is above threshold and that a variety of personal and social characteristics such as age, sex, knowledge, and culture play a role in modifying the behavior if and when it occurs.

An HIV-prevention intervention designed, for example, to facilitate correct and consistent condom use based on the health belief model would try to influence these theoretical factors. The intervention might try to get individuals to realize that their behaviors place them at risk of HIV infection, thus increasing their perception that they are susceptible or vulnerable to HIV infection. Alternatively, it might focus on the severity factor, a person's belief that AIDS is a deadly disease, or the effectiveness factor, the belief that correct and consistent condom use will effectively prevent or reduce HIV infection. An intervention that encouraged people to carry condoms would be addressing a possible barrier to condom use. Messages in the mass media that reminded people to use condoms could be construed as providing cues to action. Ideally, the choice of the factor to address with an intervention would be made on the basis of behavioral research that identified that factor as an important determinant in the particular population of interest.

THEORY OF REASONED ACTION

The Theory of Reasoned Action, a social psychological approach to behavior, assumes that changing behavior is a matter of changing the cognitive structure underlying the behavior in question. The theory is a general theory of behavior that deals with the relations among beliefs, attitudes, intentions, and behavior (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) and has been used to understand behaviors from a variety of domains including health in general and HIV/AIDS in particular (Fishbein and Middlestadt, 1989; Fishbein et al., 1991).

In some respects, the theory is best seen as a series of four hypotheses. At the first level, a behavior is assumed to be primarily a function of a person's intention to perform that behavior. At the next level, the intention to perform the behavior is seen as a function of the weighted combination of two factors, a personal factor (the attitude toward the behavior) and a social factor (subjective norm). The attitude toward the behavior is the feeling of favorableness toward the behavior; the subjective norm is the perception that important others think that he or she should (or should not) perform the behavior. Underlying the attitude toward the behavior is an underlying cognitive structure of behavioral beliefs that performing the behavior will lead to certain outcomes and the evaluation of these outcomes. Underlying the subjective norm is an underlying cognitive structure of normative beliefs that particular individuals or groups think that one should or should not perform the behavior and the person's motivation to comply with each of these significant others.

An intervention to encourage correct and consistent condom use that is based on the Theory of Reasoned Action would address either the cognitive structure underlying the attitude toward the behavior or the subjective norm. For example, an intervention that convinced people that correct and consistent condom use effectively reduced risk of other sexually transmitted diseases would be addressing the behavioral belief factor underlying the attitude toward the behavior, facilitating a more favorable attitude, making the intention more positive and thus increasing the likelihood that the behavior will be performed. Note that, according to the Theory of Reasoned Action, beliefs about outcomes other than health outcomes might be important determinants. Thus, to deal with the behavioral belief that condom use might have led to distrust in the relationship, an intervention might need to be developed to facilitate ways to introduce condoms among partners that strengthened rather than threatened the relationship. From a normative perspective, an intervention that reinforced the normative belief that peers expected the person to use condoms correctly and consistently would be addressing the cognitive structure underlying the subjective norm, making the person perceive more normative pressure, have a more positive intention, and thus be more likely to use a condom correctly and consistently. Again, ideally the choice of the particular factor to address would be based on empirical research in the target population of interest.

SOCIAL COGNITIVE LEARNING THEORY

The roots of Social Cognitive Learning Theory lie in the learning approaches to psychology as well as in clinical psychology applications to correct dysfunctional behaviors. Learning theory focuses on behavior and the antecedents and consequences of behavior in the environment. By contrast, Social Cognitive Learning Theory recognizes the important role of cognitive interpretations. That is, Social Cognitive Learning Theory (Bandura, 1977; 1986) is based on a triadic relationship among the person, behavior, and the environment through a process called "reciprocal determinism." In other words, whereas the environment largely determines or causes behavior, the person uses cognitive processes to interpret both the environment and his or her behavior, and also behaves in ways to change the environment and meet with more favorable behavior outcomes. This theory has been used effectively to explain and change a diverse set of health behaviors such as smoking cessation, weight reduction, increase in exercise and contraceptive practices, and recently AIDS prevention (Bandura, 1989; 1991).

According to Social Cognitive Learning Theory, two sets of cognitions are important in understanding and changing behavior: outcome expectations and self-efficacy. Outcome expectations include a person's interpretations of the consequences of performing the behavior. The person will perform the behavior to the extent that he/she believes it will pay off or will lead to positive consequences and avoid negative consequences. This aspect of Social Cognitive Learning Theory is very similar to the Theory of Reasoned Action. Self-efficacy is the person's belief in their capabilities and confidence in performing the behavior, their belief that they can choose to do it under difficult circumstances, and can persevere in the face of difficulties.

These self-efficacy cognitions represent a particularly important contribution of Social Cognitive Learning Theory. Just considering the HIV-prevention behavior of correct and consistent condom use, it is clear that skills at buying, correctly using, having available, and discussing and overcoming partner's resistance are vital. And, people must not only have these skills but must be confident in their abilities, they must have self-efficacy. Theoretically, a person with a strong sense of self-efficacy would be more likely to try a behavior, set a higher goal for how well or often the behavior is performed, persevere longer, use a variety of strategies, and try again when faced

with temporary setbacks.

An intervention based on Social Cognitive Learning Theory might have people watch models successfully negotiating condom use with a partner in a variety of different circumstances. These materials could not only teach negotiation skills but could promote self-efficacy or confidence in abilities as well as demonstrate possible positive outcomes of effective negotiation.

COMMON FACTORS UNDERLYING THE THREE BEHAVIORAL THEORIES

Fortunately for the program planner attempting to set priorities among interventions based on sound behavioral and social scientific theory, there is a significant amount of overlap and consistency among these three major theories of behavior. In fact, based on a series of meetings among theorists representing each of these theories, a list of eight basic or common factors has been identified (Fishbein et al., 1993). These factors not only represent points of consensus among the theorists, but have been empirically shown to account for or explain most of the variation in any given behavior. These eight factors were summarized in a National Commission on AIDS 1993 report (National Commission on AIDS, 1993) and are shown in Table A-1.

TRANSTHEORETICAL MODEL

As implied by its name, the Transtheoretical (or Stages of Change) Model attempts to explain health behavior independent of specific theoretical factors. Instead, this model (Prochaska and DiClemente, 1986) proposes that behavior change occurs in a series of stages. This model assumes that individuals start with no intention to change, form weak intentions, strengthen these intentions, try the behavior inconsistently at first, and then finally adopt the new behavior as a routine part of their lives. These stages are described in Table A-2.

Movement through the stages will vary greatly from population to population and from individual to individual. Some people may remain in the contemplative stage for months or years; others cycle back and forth between stages. Once a person initiates or adopts a behavior, that person is vulnerable to relapse. Effective interventions first determine where the population is on this continuum of behavior change and move them to the subsequent, more advanced stage. Baseline and follow-up assessments of the percentage

of population of interest will help the planning group to plan interventions and assess progress and movement through the stages.

Public health interventions have often been developed for populations in the preparation stage by promoting an immediate behavior change, like consistent condom use. However, according to this theory, when the majority of the target population is in the pre-contemplation stage, this type of intervention will only be partly effective in promoting behavior change. To be effective, intervention methods and messages must be targeted to the specific needs and stage of a group. The various factors from the three major theories, the Health Belief Model, the Theory of Reasoned Action, and Social Cognitive Learning Theory, can help move persons from stage to stage in the Transtheoretical Model. For example, to motivate individuals at the pre-contemplation stage to form intentions, an intervention might first alert them of the potential danger of not changing by creating a perception of risk. For individuals at the preparation stage who have formed an intention to behavior, an intervention might try to increase the self-efficacy for the behavior. For further information on how this might be done, see Baranowski (1990) and O'Reilly and Higgins (1991).

THE IMPORTANCE OF SOUND SCIENTIFIC THEORY FOR DESIGNING, EVALUATING, AND SELECTING AMONG HIV PREVENTION INTERVENTIONS

There are a number of advantages to understanding and using sound behavior and social science theory. Research to identify the factors associated with the behaviors that place people at increased risk of infection and thus to identify behavioral determinants to be addressed by intervention is more effective and interpretable if it is guided by sound theory. The theories serve to outline important behavioral factors, to indicate ways of measuring these factors and to facilitate the communication of the results. Put most simply, evaluation research that identifies not only that behavior changed but which intervening factor contributed to that change allows the planner to understand why the intervention worked, thus increasing the likelihood of successfully replicating it.

No one theoretical model has been found to predict human behavior with complete success. However, even imperfect theories can provide useful guidance in designing, evaluating and choosing among HIV prevention interventions. Important opportunities to translate the components of behavioral theories into public health practice remain. For further information on this topic, see Valdiserri et al. (1992).

Table A-1: Common Theoretical Factors

The Population at Risk Must:	Factor
1. Believe the advantages of performing the behavior (benefits) exceed the disadvantages	Expected Outcomes (attitude)
2. Have formed a strong positive intention or be committed to perform a behavior	Intention
3. Possess the skills to perform a behavior	Skills
4. Believe that they can perform a behavior	Self-Efficacy
5. Believe that the performance of a behavior will more likely produce a positive than a negative emotional response	Emotion
6. Believe that the performance of a behavior is consistent with their self-image	Self-Standards
7. Perceive greater social pressure to perform a behavior than not to perform it	Perceived social norms
8. Experience fewer environmental constraints to perform a behavior than not to perform it	Barriers

Adapted from National Commission on AIDS, 1993

Table A-2: Stages in the Transtheoretical Model

	Stage Description
1. Pre-contemplation	People in this stage have no intention to change behavior in the foreseeable future, are unaware of the risk, or deny the consequences of risk behavior.
2. Contemplation	People are aware that a problem exists, are seriously thinking about overcoming it, but have not yet made a commitment to take action.
3. Preparation	People intend to take action in the near future and may have taken some inconsistent action in the recent past.
4. Action	People modify their behavior, experiences, or environment to overcome their problems; the behavior change is relatively recent.
5. Maintenance	People work to prevent relapse and maintain the behavior change over a "long" period of time.

Adapted from Prochaska and DiClemente, 1986